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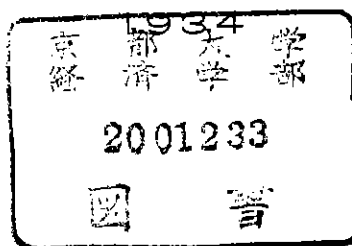
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## HORIZONTAL AND VERTICAL DIFFERENTIATIONS IN THE AGRICULTURAL PRODUCTION OF JAPAN

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### 1. INTRODUCTION

In present-day agricultural life, self-sufficiency economy such as used to prevail in former days is no longer possible. With the introduction of currency economy, the production of commodities has come to play an important part in agricultural economy. Among the factors which have contributed to the merchandising of agricultural produce may be mentioned, in the first place, the separation of manufacturing industry from agriculture. In its primitive form, farming included various kinds of manufacturing operations. One agricultural family unit covered, so to speak, the entire process of social production. As industry developed, however, the more profitable manufacturing businesses gradually attained the status of independent mechanical industries, being dissociated from farming, and the manufactures produced by these industries came to be supplied to the farmer as cheap and convenient industrial goods. It thus became absolutely necessary for the farmer to purchase these industrial goods, with the result that he was compelled to sell his produce as merchandise in order to obtain the necessary money to purchase them. Next, in consequence of the revision of the taxation system, it became necessary for taxes and public imposts, which formerly were paid in kind, to be paid in currency. Moreover, the enforcement of the monopoly system and the adoption of an excise policy by the Government compelled the farmer to buy, for instance, tobacco and *sake*, which he had previously been allowed to manufacture himself for his own consumption. This again forced the farmer to put his farm produce on the market to get the money with which to buy them. Furthermore, technical progress in agricultural production,

increased consumption of artificial fertiliser, the purchase of seedlings of good quality, and the improvement and adjustment of arable land have combined to increase the farmer's expenditure, with the result that a further impetus has been given to the merchandising of agricultural produce by the farmer in order to obtain the wherewithal to cover such expenditure.

Although, as has been stated above, the production of commodities forms an important part of present-day agricultural life, in a country of Japan's small scale of agricultural economy, the farmer is still supplying a part of his own means of livelihood. Such being the case, it may be said that in the life of the small farm the ultimate object is to maintain and enrich the farmer's own livelihood, and that the acquisition of money is one way of attaining this desired end. But seeing that owing to the above-mentioned various circumstances, the farmer has already come to play a part in exchange economy, it is very important for the maintenance and enrichment of his livelihood that he should be able to obtain money through the marketing of his own produce, unless his life is to revert to the self-sufficiency economy of former days. It is, therefore, only natural that, when he is thus obliged to turn his produce into merchandise, there should arise a tendency for even the small farmer to direct his attention to the production of the most profitable goods from the necessity of gaining the largest possible amount of money through their sales. That there is such a tendency is proved by the changes in the relative acreages of fields allotted to the cultivation of various kinds of agricultural products—changes which indicate that the farmer is gradually abandoning unprofitable crops in favour of more profitable ones. But the profitability of each crop depends on its market price, and in organic production like agriculture, it is largely influenced by natural factors, such as the nature of the soil and the climatic condition in the localities concerned. It is, furthermore, conditioned by fluctuations in demand, by the progress of means of transport, and by

changes in economic organisation. The farmer's recourse to the cultivation of more profitable crops gradually leads to a specialisation of agricultural pursuits. Viewed from the standpoint of the theory of location of industries, special kinds of production prosper where the best local conditions exist. Such changes are observable not only in domestic, but also in international relations. To put all kinds of agricultural products in parallel contrast and to differentiate them regionally is called horizontal differentiation. It is horizontal differentiation, for instance, when in one district attention is directed exclusively to the raising of cereals, in another district chief concern is given to horticulture, fruit growing or stock-breeding. If the future agricultural policy of this country, like the programme for the economic revival of rural communities, now being pursued by the Government, means the rationalisation of agriculture in all directions by allotting suitable crops to the districts suitable for their cultivation with a view to increasing the national power of agricultural production, unshackled by mercantilism based on prefectural units, such as has hitherto prevailed, it is necessary to give careful attention to the question of why horizontal differentiation in agricultural production has developed and what course its development is taking.

In agricultural production, another kind of differentiation also manifests itself, side by side with the above-mentioned horizontal differentiation, in that each stage of production right up to the manufacture of the finished goods gradually falls under independent management. This is called vertical differentiation. That manufacturing businesses formerly included in agriculture were converted into independent industries is one expression of this differentiation. With regard to the production of raw silk, for instance, there has been differentiation into the cultivation of mulberry trees, the breeding of silkworms, the reeling of the yarn and the marketing of the raw silk, each of these differentiated branches being under independent management. In industrial production in general, this differentiation is highly

developed. But when capitalism reaches its monopolistic stages, it gives rise to an opposite tendency, viz. for the processes of production to integrate. For this vertical differentiation converts each stage of the production of a commodity into an independent enterprise, interposes a number of intermediate producers between the production of the raw material and the production of the finished article, and reduces the returns on capital invested in the production of finished goods by the resulting increase of expenditure. Consequently, where capital becomes enormous and the quantity of the raw materials it employs very large, the unification of vertical differentiations by means of the same capital is planned. That is to say, notwithstanding the fact that the entire process of production—from the production of raw materials to the production of finished goods—is technically extremely differentiated, the articles produced at each stage of production are not put on the market but are used as materials for manufacture within the organism of the same capital, finished goods only being put on the market as commodities. In agriculture also, it is noticeable that attempts are now being made to unify all these stages of differentiation through the operation of farmers' co-operative associations (*sangyō kumiai* 産業組合). The organisation of co-operative dairy societies and the co-operation of silk manufacturers are cases in point. In view of the fact, however, that agricultural manufacturing industries are under strong capitalistic control, it is doubtful whether they can be regained and unified by the farmers—the producers of raw materials—by means of their co-operative associations. As a means of solving the agrarian problem, it is urged in many quarters that some of the manufacturing industries must be transferred to rural communities. In considering the feasibility or otherwise of such a plan, it is possible to divide industries into two categories, in respect of the raw materials used, namely, the one embracing those which use domestic raw materials, the other those which do not. Let me here consider the

feasibility of the above-mentioned plan in regard to industries belonging to the former category. In this case, it is of great significance, for the solution of the problem of the industrialisation of agriculture, to study the deflection of these manufacturing industries from agriculture—that is to say, the extent to which vertical differentiation is taking place in agricultural production—the course of development which this process of differentiation is taking, and the effects it is producing on agriculture and the farmers.

## 2. HORIZONTAL DIFFERENTIATION IN AGRICULTURAL PRODUCTION

As already stated, the merchandising of agricultural produce has caused agriculture to produce more profitable goods, with the result that the production of special kinds of agricultural produce has gradually become concentrated in regions best suited for their production not only from climatic and physical points of view but from the view points of marketing and labour facilities. The tendency has thus developed for the organisation of agricultural management to be simplified, for by this simplification special occupations with great facilities for the production of commodities can be brought into being. The result is that the conversion of farm economy into exchange economy has been accentuated. Thus, this process of conversion into exchange economy and the transformation of agricultural produce into commodities both go on developing, each exerting a stimulating influence on the other. As I shall point out later on, however, there exist, of course, strong natural and economic factors in agriculture which tend to promote variety of agricultural management by obstructing the tendency of simplification of production.

The horizontal differentiation of agricultural production was studied by von Thünen many years ago and by Brinkmann recently.<sup>1)</sup> Such studies generally start from

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1) J. H. von Thünen, *Der isolierte Staat in Beziehung auf Landwirt-*

two premises. On the one hand, the static state of national economy is first assumed, and on this assumption the laws are studied by which the locative parallelistic relations of the production of the various kinds at the various given stages of development can be explained. On the other hand, the active economic organism is studied in order to explain such changes in the direction of production as are conditioned by time. In the first mentioned study, locative factors, which constitute the forces that operate when the modes of management of various kinds are formed, are scrutinised, and in the latter study, the changes which come over the ratios in the power of locative factors in the course of development are enunciated. As it is for the purpose of facilitating research that the question is approached from these two different angles, we cannot consider, as von Thünen does, the changes which the lapse of time brings about in the stages of land cultivation as essentially a reflection of changes in economic zones at a certain stage of development and conclude that, in so far as farm crops are concerned, an isolated country presents all at one time the phases which a same country takes a few centuries to develop. Such an argument is tenable only on the limited assumption that economic development and progress exert their influence merely in the direction of strengthening the power of disposition pivoting on the market, but that it does not affect the ratios of the forces of locative factors. As a matter of fact, however, with the lapse of time, deviations occur in the various factors which play their part in the disposition of production and also in the component elements of these factors, and consequently it is impossible to say that all these forces are always in the same state of equilibrium. Thus, parallelism between changes of locative factors due to geographical situation

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schaft und Nationalökonomie, 1824—1850.

Th. Brinkmann, Die Oekonomie des landwirtschaftlichen Betriebes (in Grundriss der Sozialökonomik, Bd. VII) 1922.



and changes of locative factors which time brings about either becomes extinct or is at least partially destroyed. As some of the main causes which disturb the parallelism between the two may be mentioned changes which occur in the demand ratios for agricultural products in consequence of the elevation of the standards of living of a nation, and the deprivation of agriculture of the cultivation of animal and vegetable raw materials, which is a necessary consequence of the progress of industrial technique.<sup>1)</sup>

With regard to the change of the areas for the cultivation of each agricultural product consequent on its price fluctuations, the higher the price of some particular agricultural product rises relatively, the more favourable becomes the position of this crop in the competition for the acquisition of land for its cultivation. When one crop is abandoned in favour of another crop, the relative profitableness of all crops is taken into consideration. In a country like Japan, where agriculture is operated on a small scale and is dependent chiefly on family labour, however, this comparison of the profitableness of various crops is not made on the basis of a very accurate calculation of the cost of production, as is done in agriculture under big capitalistic management, but rather it takes the following simple form: Of the items of the cost of production, (1) the farm rent is usually rigidly fixed by usage and remains unaltered in spite of change of crops for cultivation, and consequently, in so far as this is the case, it is left out of consideration in the comparison of profits. (2) The amount of floating capital (such as the cost of fertiliser) required for the production of the old and the new crops comes in for due consideration. Let this be denoted by  $F_c$ . (3) Further, in regard to the fixed capital, (a) agricultural implements, such as hoes and spades, which can be used for the cultivation of the new crop just as they were used for the cultivation of the old crop are left out of account

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1) Brinkmann, a. a. O., S. 113.

in this comparison of profits. (b) The value of certain things locked up in some particular crop, which are rendered entirely useless by the abandonment of this crop, and the cost of redeeming the expense of fixed capital equipment which is particularly necessary for the cultivation of the new crop come in for due consideration. Let the total of these two items be C. The bigger this total, the greater is the hindrance to the replacement of the old crop by a new one. (4) Lastly, as to wages, as they do not involve direct defrayal of money when labour is supplied by the farmers themselves, they do not enter into the comparison of profits. The wages of hired labour only claim attention. This I shall denote by W. Both peasant proprietors and tenant farmers necessarily take to the cultivation of crops which yield a bigger surplus in the formula: Gross revenue— $(F_c + C + W)$ . In a word, the balance left after all the necessary expenditure has been deducted from the gross revenue from each crop, that is, the amount of remuneration for family labour, is the decisive factor.

But it is rare that the family labour power of Japanese farmers is utilised at all times to the highest possible limit. In most cases, part of this labour power is held in reserve by each family. Should there appear a new profitable crop, the farm labour in reserve is mobilised throughout the country and devoted to the cultivation of this particular crop, which results in the re-distribution of areas for agricultural crops to such an extent as might be inconceivable from the point of view of capitalistic consideration of profit. This leads to over-production, and a disastrous slump in price sometimes results.

Now, let me examine, in the light of the actual state of agricultural production in this country, the phases which the horizontal differentiation assumes, and the course which differentiation of this kind is taking.

I shall, first, consider the horizontal differentiation of agricultural production in a static condition, such as was studied by von Thünen. As Japanese agriculture is already

linked to world economy, not only Japan proper but also her colonies are affected by foreign competition in agricultural produce. In domestic relations also, the co-existence of a large number of urban markets and the development of means of communication exert their complex and intricate influences on Japanese agriculture. Such being the case, the distribution of agricultural management does not manifest itself so clearly as in an isolated country like the one assumed by von Thünen. It cannot, however, be denied that the main factors that stimulate this distribution are the communications facilities available and the natural characteristics of the land or its special productive power. To take Tokyo as an example, the distribution of agricultural management in the suburban district (north-eastern part) is shown by Table I.

Thus, in suburban districts, ornamental plants demanded by civilised urban life, or fresh high-class vegetables which cannot be transported from distant districts are chiefly cultivated. And conditioned by regular rates of carriage, special zones are formed for the cultivation of these products. The suburbs of big cities are largely residential, with enterprises such as dairying, stock-farming, the cultivation of ornamental plants and vegetable growing carried on here and there. These enterprises, which constitute the so-called Metropolitan agriculture, take a peculiar form of management. Outside these zones exists the ordinary form of agriculture—concerned chiefly with the cultivation of cereals.

All agriculturally-constituted zones forming suburban districts grow in extent as the demand for agricultural products of special kinds increases in consequence of the expansion of cities and as roads and means of transport improve. Up to the early years of Meiji, for instance, things were carried by men on their shoulders or on horseback, but this mode of transport was gradually discarded in favour of barrows, carts and ox-carts. Nowadays, trucks are in general use as means of transport. With the gradual

Table I. Distribution of agricultural management in the suburban district of Tokyo.

Zones	Distance from Nihonbashi bridge (the centre of the city)	Urban or agricultural districts	Agricultural organisation						
			Dairying	Hothouses	Percentage of poultry-raising families with over 50 birds to the total of such families	Orna-mental plants	Cereals	Vegetables	Mulberry-fields
Urban region	1.5 ri *	Highly developed commercial and industrial districts	—	—	—	—	—	—	—
Suburban districts	No. 1 zone 1.5 to 2 ri	Industrial and dairy districts	1,376 head	22 tsubo*	3.31%	Herbs, flowering plants and pot plants	—	—	—
	No. 2 " 2 to 3 ri	Truck-farm, dairying, hothouse, paddy-field, and industrial districts	556	2,093	0.01		29.2%	70.8%	—
	No. 3 " 3 to 4 ri	Truck-farm and paddy-field districts	10	299	0.20		54.2	45.8	—
	No. 4 " 4 to 5 ri	"	—	210	—		62.1	37.0	—
More distant districts	No. 5 " 5 to 8 ri	Paddy-field and truck-farm districts	—	—	—	—	64.7	35.3	—
	No. 6 " 8 to 12 ri	Paddy-field, truck-farm, and mulberry-field districts	—	—	—	—	88.4	10.9	0.7%
	No. 7 " 12 to 15 ri	"	—	—	—	—	77.0	9.7	13.3
	No. 8 " 15 to 18 ri	"	—	—	—	—	67.5	5.4	27.1
	No. 9 " 18 to 20 ri	Mulberry-field districts with cultivation of some rice	—	—	—	—	46.8	9.8	43.4

\* Note: One *ri* is about 4 kilometers and one *tsubo* is about 3.3 square meters.

improvement of the means of conveyance, there has been a relative fall in freight charges, and the districts which supply special agricultural products to cities have grown in extent. For instance, in the days when barrows were the only available means of transport, the areas supplying these goods were confined to localities within three *ri* (one *ri* is about 4 kilometers) of the heart of the city, but when carts supplanted barrows as the ordinary means of transport, the limits extended to five *ri*, and now that trucks have come into general use, they have further extended to ten *ri*.

With this development in the means of transport, the suburban areas where fruit and vegetables are grown become extended, while, on the other hand, a new tendency arises for vegetables for urban markets to be grown in districts located much farther away. The prime factor in stimulating this new tendency is the development of means of transport and transport equipment. Formerly, perishables such as fruit and vegetables were grown exclusively in districts in close proximity to the cities where they were consumed, but as transport facilities increased, it became possible for the goods to be produced in distant places and yet reach their consumers in as good condition as those produced in suburban districts, so that distant places became in a position to compete with suburban districts for markets. Secondly, although suburban districts have an advantage over distant places in the cultivation of vegetables because of their proximity to urban districts, they are not always superior to distant districts in respect of the nature of their soil and climatic conditions. Therefore, thanks to improved means of transport, distant districts which enjoy better natural factors are in a position to compete with suburban districts in virtue of the superior quality of their products and lower cost of production, though it is true that their goods have lost something of their freshness by the time they reach their consumers. Thirdly, as the suburban vegetable-growing areas become farther removed from the centre of cities in consequence of

the expansion of urban districts, they gradually lose those advantages which their proximity formerly conferred on them, with the result that comparatively distant places appear as their competitors in the supply of goods to the central parts of cities. Fourthly, this tendency is further accentuated by the progress of the art of cultivation in distant places, by the development of co-operative marketing societies and by the establishment of central wholesale markets in cities. The distant districts which have made big headway in the field of supplying vegetables and fruit to big cities fall into two categories. To one category belong those districts which have only recently taken to the cultivation of vegetables and fruit, while the other category comprises those districts which, though they have always been known for the production of such produce, formerly supplied the demand of small local towns only, but have now come to supply also the demand of big cities in the Kantō and Kansai districts. In either case, the more the means of communication, storage equipment and the producers' co-operative marketing societies develop, the more important becomes the rôle of natural factors such as climatic, geological and topographical conditions in these producing centres in stimulating the horizontal differentiation of agricultural production, and changes of crops for cultivation in all areas are further facilitated. This leads to the frequent alteration of producing centres of agricultural products and the tendency is accentuated for all products to be grown in the districts best suited for them. It was due to over-supply resulting from the rapid expansion of vegetable supplying areas, for which the development of the means of transport and the general use of trucks are responsible, that the prices of vegetables were the first to decline at the time of the agricultural panic of 1930. Under the circumstances described above, suburban districts have gradually lost their former monopoly of the supply of vegetables to urban consumers.

For instance, in the supply of vegetables, Kanagawa, Shizuoka and

Aichi prefectures first appeared as the rivals of suburban districts, and then the southern districts of Shikoku, the south-eastern districts of Kyūshū, the southern part of Kishū province, the Bonin Islands, the Loochoo Islands and Formosa came into the competition as producers of warm-climate vegetable. In the production of oranges, Hiroshima and Ehime prefectures have made big headway to challenge the position of Wakayama, Ōsaka and Shidzuoka prefectures, which have long been established the chief producing centres. The centres of production have thus gradually moved westwards and southwards. In the production of water melons, Aichi and Nara prefectures have made remarkable advance, while in regard to loquats, Chiba, Hyogo, Ehime, Nagasaki and Kagoshima prefectures have come to figure as the producing centres. Regarding grapes, Yamanashi prefecture, the prime producing centre for many years, is now surpassed by Ōsaka prefecture. In point of grape acreage, Okayama and Hiroshima prefectures are running Ōsaka prefecture close. In the cultivation of peaches, Kanagawa, Okayama and Hiroshima prefectures have made remarkable headway, while as for cherries and apples, Aomori prefecture and Hokkaido have come to rank among the chief producing centres. Shidzoka prefecture now produces Japanese pears in abundance, and Tottori and Okayama prefectures have become famous for the production of pears of the *nijisseki* kind (a kind of European pear.) Sendai *hakusai* (greens) have also made good headway. In the production of tea, Kyoto prefecture's position as the chief producing centre is now challenged by Shidzuoka prefecture. Mulberries are now grown all over the country, instead of being largely confined as formerly to Fukushima, Gumma, Nagano and Some other prefectures. With regard to rice, there has been a remarkable increase in rice acreage in Hokkaido, the North-East, in the Hokuriku district, Kyūshū, Formosa and Korea.

The steady headway made by distant producing centres in consequence of the expansion of cities and the development of means of communication has caused changes both in the methods of cultivating vegetables and in the kinds of vegetables grown in suburban districts. For one thing, the methods of cultivation formerly employed of warming the beds by means of oil-paper *shōji* (screens) or glazed screens to expedite the growth of vegetables have given way to hothouse cultivation pure and simple. Even this method of hothouse cultivation is now receiving a blow on account of the advance made by in urban markets vegetables from southern provinces. For improved transportation facilities enable vegetables from southern and warmer provinces to be put on urban markets in large quantities in the between-season period for vegetables grown in open farms—the

period to which hothouse cultivators of vegetables in suburban districts used to pin high hopes. In order to meet this new situation, these hothouse cultivators have had to choose between two courses—the change of objects of cultivation to early cucumbers, tomatoes, carnations, roses and sweet-peas, which cannot be transported by railway or ship over long distances from southern provinces both on account of damage in transit and owing to their perishable nature, and the cultivation of, say, high-class melons of a quality far superior to what can be produced in the open fields in southern provinces. Besides, it has become necessary for them to take care that their produce is not put on the market at the same time as vegetables from southern provinces. This too involves the choosing of different kinds of crops for cultivation. In connection with the cultivation of high-class vegetables, due note must at the same time be taken of the fact that the demand for high-class hothouse vegetables, which greatly increased during the days of business prosperity, has, so far from suffering any decline in times of business depression, witnessed a further increase, due to the elevation of public taste, a greater appreciation of food and the spread of the vitamin theory.

Although, as already stated, the development of the means of communication causes gradual expansion of the areas from which urban districts obtain their supplies, certain limits are necessarily set to this expansion by the perishable nature of the products and the factor of freight costs. Accordingly, the principle of suitable crops for suitable districts applies, in a modified form, to districts which are too distant from market places. These distant districts have to supply their products to markets in the form of manufactured goods. For instance, milk is made into butter or cheese and raw fruit and vegetables are supplied as canned products. Such processes are rendered necessary by the perishableness of the primary products. Again, for the purpose of lowering freight costs, potatoes are manufactured into alcohol, sugar



canes into sugar, and so forth. In the latter case, the bigger the co-efficient of the economy of freight, the more profitable it is to manufacture primary products into finished goods at the producing centres. The expense involved in this manufacturing process at producing centres diminishes as the scope of management extends, but, on the other hand, the extension of the scope of management renders imperative the collection of raw materials from more distant areas, which results in a progressive increase in freight cost. Such being the case, such manufacturing business, even if undertaken by farmers' co-operative associations, finds its rational scale at a point where the aggregate of the manufacturing cost and freight charges for raw materials is lowest.<sup>1)</sup> Accordingly, the rationality or otherwise of the existence of co-operative associations for the manufacture of raw materials into finished goods is dependent on this consideration. Thus, generally speaking, where more efficient transport facilities are available, agricultural products are sent to markets in a more crude state, whereas, on the contrary, where there are no good transport facilities, farmers endeavour to economise the cost of transportation by manufacturing their products into less voluminous articles. This accounts for the development of creameries in Hokkaido and the North-East.

So far, attention has been confined to the domestic market in considering the question of converting agricultural products into finished goods, but in present-day international economy, it is impossible to ignore the effects of foreign competition. For instance, although the districts far away from big cities can supply butter and cheese made from milk to urban markets, these milk goods are, as commodities of international trade, exposed at the same time to price

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1) Vgl. Tschajanow, Die volkswirtschaftliche Bedeutung der landwirtschaftlichen Genossenschaften (Weltwirtschaftliches Archiv, Bd. 24, Heft 2., Okt., 1926) S. 275.

competition from rival foreign goods, so that the cheaper the foreign imported goods are, the more widely distributed becomes the creamery industry in the country.

So far, I have discussed the tendency, which grows with the development of the means of communication, for agricultural products to be cultivated in the districts with natural conditions best suited for them. The progress of industrial arts also similarly influences the horizontal differentiation of agricultural production considerably. In the study of the progress of industrial technique, the advance of general industrial technique and the development of special agricultural technique suggest themselves. The progress of general industrial technique leads to the replacement of organic products by inorganic products. Industrial technique has already succeeded in producing formidable substitutes for indigo, camphor, silk yarn, rubber and butter. The cultivation of indigo in the districts on the Yoshino river, which was once flourishing, has now been completely crushed by the competition of artificial indigo imported from Germany, and the agricultural organisation on the lower reaches of the river has consequently become multilateral. In some areas on the river, the farmers are now engaged in sericulture, transforming their former indigo plantations into mulberry fields. As another example, it may be mentioned that the cultivation of rape-seeds is declining everywhere in the country as a result of the spread of the use of electric light. The development of industrial arts is thus causing a decline in the cultivation of certain special agricultural crops, thereby greatly accentuating the horizontal differentiation of agricultural production.

Next, the progress of the technique of agricultural production itself stimulates the horizontal differentiation of agricultural production. For instance, when the price of rice was high, there was much improvement in the quality of rice produced, and the rice-producing areas in Hokkaido were pushed farther northwards. In the meantime, Formosan and Korean rice has come to compete with Japanese

rice. The marked headway of vegetables from southern provinces, to which reference has already been made, was due at once to the perfection of the means of conveyance and to the spread of improved knowledge of vegetable cultivation. This tendency is further stimulated by the control of the supply of agricultural products, which takes the form of joint packing, joint inspection, co-operative marketing and pooling of agricultural products. With regard to the supply control by individual prefectures, marked results are achieved in the case of the pumpkins of Miyazaki prefecture, the *hakusai* (greens) of Miyagi prefecture, the bamboo-shoots of Tokushima prefecture, and the hothouse garden plants of Shizuoka and Aichi prefectures. Marketing control of this kind, coupled with favourable natural factors and transport facilities continues to accentuate the horizontal differentiation of agricultural production.

In this way, as the process of merchandising agricultural products develops, there is a tendency for agricultural crops to be grown in the districts best fitted for their cultivation, and compound agricultural management gradually assumes the phase of simple management, for under the simplified form of management, special lines of agriculture more efficient for the production of commodities come into being. However, in organic production such as agriculture—and especially in the agriculture of this country, which is operated on a small scale with family labour—there exists a force, born of the following considerations, which operates to bring about a variety of agricultural management: (1) seasonal equilibrium in the utilisation of family labour power, (2) maintenance of the productive power of land through the rotational cultivation of crops, (3) self-supply of manure by keeping domestic animals, and (4) mitigation of risks from a slump in the price of any particular agricultural product by undertaking conjointly the cultivation of both rice and vegetables and sericultural and stock-farming pursuits.

Thus, in consequence of the production of commodities

by farmers, the tendency becomes more pronounced for crops and vegetables to be grown in districts best suited for them, and the horizontal differentiation of agricultural production and the simplification of management are stimulated. On the other hand, the existence of various factors which compel multilateral agricultural management prevents an extreme simplification of agricultural management. This is more so in this country, because there exist no remunerative crops except rice suitable for cultivation in Japanese paddy fields and also because Japan's neighbours being far less developed agricultural countries, there is little room for the exportation of Japan's high-class horticultural products to those countries. Such being the case, rice and barley crops will remain the main lines of Japanese agriculture and it will be in complementary agricultural pursuits such as sericulture, horticulture and stock-breeding that the tendency will mainly manifest itself for agricultural crops to be raised in the most suitable areas.

### 3. THE VERTICAL DIFFERENTIATION OF AGRICULTURAL PRODUCTION

In agricultural production, side by side with horizontal differentiation, with which I have been dealing so far, there develops also vertical differentiation, namely the tendency for each stage of production up to the manufacture of finished goods to be put under separate and independent management. This tendency begins with the elimination of the domestic manufacturing industry aiming at production for the farmers' own consumption, in consequence of the development of capitalistic industry. Manufacturing industries such as spinning, reeling, milling, brewing, dairying and sugar manufacturing have long been divorced from agriculture, to which formerly they belonged. As a result of this vertical differentiation of agricultural production, relationships between manufacturers who use agricultural

products as raw materials and farmers who produce these raw materials take a variety of forms according to the stages of development attained by these manufacturing industries.

In the initial stages of manufacturing industry, when agricultural raw materials are worked up with small capital on the lines of handwork, big commercial capitalists interpose themselves between the producers of these raw materials and the industrialists who work up these raw materials to act as intermediaries. The producers of raw materials then do business with local brokers, who are the agents of the big commercial capitalists, and the whole of the raw material producers scattered over many districts are thus brought under the influence of the big commercial capitalists through these local brokers. When small industrial manufacturers come to wield a fair amount of capital, they go direct to the farmers to buy their raw materials, just as the local brokers do. In this case, however, direct transactions between the farmers and the small industrialists simply take a peculiar form of deals for commercial capital. When, due to the development of manufacturing industries on the big factory plan consequent on the growth of capitalism, small industries are driven to the wall, the control of factories by big commercial capitalists undergoes a transformation, and either rivalry or a combination between big industrial and commercial interests comes about. Thus, with the expansion of industrial capital, big industries gradually come to demand mass transactions, on the one hand, and the unification of the quality of raw materials, on the other, with the result that farmer producers of raw materials become linked to big capitalists in the centre in a direct way. This induces co-operative marketing of raw materials on the part of the producers of raw materials, and the position of the middlemen becomes precarious.

When capitalism attains further development and the age of monopolistic capitalism is ushered in, capitalists

begin to devise means to put producers of raw materials under their direct control. Besides concluding forward contracts with producers for the purchase of raw materials, industrial capitalists proceed to direct technique and methods of producing raw materials so as to ensure the unification of the quality of raw materials, distributing seeds and fertiliser and fixing the order of cultivation in regard to crops. In this way, they reduce producers of raw materials to the position of mechanical executors of their manufacturing programmes, pure and simple. Their influence thus extends to the internal organisation of agricultural management.<sup>1)</sup> It sometimes happens also that these capitalists, on the express condition that suitable raw materials are produced, lease lands to farmers and subordinate producers to their industries, turning them into virtual factory workers.

Let me now study the vertical differentiation which is taking place in Japanese agricultural production.

1. Vertical differentiation in agricultural production manifests itself most markedly in the production of raw materials, but it also occurs in the production of foodstuffs. Whereas Japanese rice producers sell their rice uncleaned, Korean farmers usually sell their rice unhulled. In Korea, therefore, there is a call for the specific industry of hulling rice, which sometimes causes an interruption of price relations between unhulled rice and uncleaned rice. The existence in Korea of this enterprise of hulling rice, separately from agriculture, reduces to that extent the profits of Korean farmers as compared with Japanese farmers and put them under the control of commercial capitalists. Inasmuch as the hulling or cleaning of rice can be operated with comparatively small-scale equipment, there is no strong monopoly in these lines. As, in consequence, there is comparatively free competition for the purchase of unhulled rice, the subservience of farmers to these indus-

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1) Vgl. Tschajanow, a. a. O., S. 227.

tries is not very strong.

2. A similar relationship is observable between milk producing farmers and companies manufacturing milk goods. By its nature, milk is unfit for storage; it cannot be kept for more than twenty-four hours. As, moreover, it cannot conveniently be transported over long distances, transportation is limited to a radius of a dozen miles. Consequently, no severe competition is likely between different districts in the supply of milk, which enables producers to maintain a comparatively large measure of monopoly. Besides, there are few milk producers in small towns and it is easy to control the distribution and production of milk by agreement. This renders the maintenance of a monopolistic position easier. It is due to this fact that the price of milk is lower in large cities such as Tōkyō and Ōsaka than in local small towns. Once, however, milk is turned into milk goods, transportation difficulties become considerably less, but at the same time the monopoly of supply to the neighbouring cities is lost, and these goods are exposed to competition with foreign goods imported from abroad. The monopolistic nature which milk loses when it becomes the raw material of milk goods sometimes passes to manufacturing industries. While the manufacture of milk goods such as butter and cheese can be undertaken with comparatively small capital and does not consequently gain any strong capitalistic monopoly, the manufacture of dried milk and condensed milk, for instance, requires a large-scale organisation of management and large capital, and so it is easy for the capitalists concerned to secure a monopolistic position. This monopolistic position is not, however, in the milk goods market, which is exposed to foreign competition, but in reference to dealings with the producers of raw milk. This monopoly arises from the peculiar position of milk producers, who are obliged to sell their milk as raw materials to factories at short distances away and within a short period of time. Sales of milk to manufacturing factories are generally made under forward contracts. On the other

hand, milk goods manufactured by these manufacturing companies have to compete, through tariff barriers, with foreign goods from Australia and North and South America, where more favourable conditions of milk production exist. In order to minimise the force of foreign competition, the companies naturally try to cut down the prices at which they purchase raw milk rather than try to reduce the manufacturing cost or take less profit. Thus, when the milk goods manufacturing becomes independent of agricultural management and is put under the management of big capitalists, farmers necessarily fall under the sway of these capitalists. The fact that the price of milk is lower in Mishima and district, Shizuoka prefecture, where milk is produced in abundance as raw material for the manufacture of condensed milk, than in other districts is an illustration of the above-mentioned circumstance.

3. In raw silk also, when the industry differentiates into the cultivation of mulberry trees, the breeding of silkworms, the manufacture of silkworm egg cards, and reeling, the interests of these different branches of the industry are often at variance, and those interested in the final stage are liable to shift their burdens on to the shoulders of those interested in the earlier stages. This tendency is accentuated by the merger of reelers and manufacturers of silkworm egg cards, which has been the fashion of late, for it brings the interests of these people into sharper conflict with those of the sericulturists. The differentiation into the cultivation of mulberry trees and the breeding of silkworms is also witnessed in some districts, but sericulture is still, as a rule, carried on by farmers in a small way with mulberry leaves of their own growing. Mulberry leaves themselves, as raw materials for use in the production of cocoons, are not fit for transportation over long distances, a fact which makes it difficult for them to be collected from distant places. For these reasons, there are grave difficulties in the way of sericulture being conducted on the lines of capitalistic factory production. Transactions in mulberry



leaves take place only where there is a lack of balance between the quantities of the mulberry leaves grown and the number of silkworms to be bred by the sericultural farmers. In some districts, brokers act as intermediaries in such transactions, but their business is, in most cases, limited to the regulation of the demand and supply of mulberry leaves in individual villages. Such being the case, there is little prospect of any problem of real importance arising out of differentiation of this kind.

Next, as hand-reeling, which was formerly carried on by sericultural farmers as subsidiary work, developed into reeling by machinery and became independent of sericulture, the methods by which reelers secure their raw materials underwent changes. At first, cocoons were purchased from the producers direct or through the cocoon market or from wholesale merchants, but as silk-reeling developed into large-scale enterprises by big capitalists, transactions in cocoons by supply contracts known as special-contract transactions came into being from the necessity, for the reelers, of ensuring a regular supply of the requisite quantities of cocoons, and with the establishment of the so-called special-contract sericulturists' associations, sericultural farmers gradually lost their independent status. Big filatures like the Gunze and the Katakura have special need of cocoon suppliers' associations by special contract, because such associations enable them not only to economise expenditure at each stage of the cocoon transactions, but also to promote unification of the quality of the cocoon supplied, so that the efficiency of the production at the stage of reeling is enhanced and the quality of the raw silk unified. With this end in view, filatures distribute among the associations under their special contracts silkworm egg cards of definite standards, instruct their sericultural experts to give cocoon-raisers the necessary guidance in the methods of rearing silkworms, or give financial accommodation or supply fertiliser, sericultural apparatus and mulberry saplings, on condition that the cocoon-raisers supply their cocoons to

these filatures only. In the purchase of cocoons, filatures usually resort to what are called transactions by weight (*kakeme*), and so fluctuations in the price of silk immediately affect the price of cocoons. When the price of silk is low, therefore, the losses of the filatures are very often transferred to the sericulturists. As, moreover, filatures select the silkworm eggs for distribution among their sericulturists with special regard for the quality of silk to be produced, it often happens that the hatched silkworms are weak and difficult to rear, causing the sericulturists to lose in consequence. Thus, sericulturists are, to all intents and purposes, workers in the raw materials section of the filature, and are paid on the amount of their output.

A similar relationship is also observable in supply contracts between beer brewers and barley producers.

4. A notable example of the subservience of farmers who produce raw materials to capitalists who operate manufacturing industries, which springs from the separation of these industries from agriculture, is afforded by the relationship between the sugar companies and the sugar-cane growers in Formosa. The sugar manufacturing companies are eager to ensure an adequate supply of sugar cane, because, just as the cost of cocoons in the production of raw silk, so does the cost of sugar cane, purchased as raw material, constitute the major part of the entire cost of producing sugar. The forms in which supplies of sugar cane are obtained by sugar companies are that (1) they own lands and either cultivate sugar-cane themselves or make tenant farmers do the cultivation, that (2) they lease lands from others and either cultivate sugar-cane themselves or re-lease them to others for such cultivation and that (3) they purchase raw materials from sugar-cane growers generally in accordance with the sugar-cane plantation regulations in force in the island. Of these three different forms, the last-mentioned method of purchasing raw materials is most widely adopted. The sugar-cane plantations run under the regulations referred to account for about 70

per cent. of the total acreage of the sugar-cane fields in Formosa. As regards the first-mentioned two methods, the companies either employ labourers to cultivate sugar-cane on their lands or make tenant farmers cultivate it under contracts which make it obligatory for them to grow sugar-cane. In this respect, their methods are similar to those adopted by the sugar companies in Java, which lease lands from native landowners and make tenant farmers cultivate sugar cane on them. In the sugar manufacturing industry of Java, therefore, the agricultural process in the production of sugar cane forms part of the management of the sugar companies. In Formosa, however, a comparatively small percentage of raw material is produced by sugar companies; in general they are compelled to go to the sugar-cane growers for the supply of raw material. In order to facilitate the acquisition of raw material by sugar companies, the areas from which companies can obtain their supplies are defined by law, and it is so stipulated that the sugar cane grown in the prescribed areas should be supplied to the sugar companies, which also are legally fixed, the growers being thus prohibited from selling their produce to companies other than those legally prescribed. Thanks to this rule, the sugar companies are guaranteed a regional monopoly. Each sugar company gives directions to the sugar-cane growers about the methods of cultivation, the order of harvesting the crop, the methods of adjusting the harvested crop, and the method of transporting the cane, with a view to unifying the quality of the raw material. The prices at which sugar cane is purchased are fixed unilaterally by the sugar companies concerned; the farmers have no voice in the fixing of these prices. Although the sugar companies thus enjoy a regional monopoly in the matter of securing the necessary raw material, the sugar which they produce has to compete, through tariff barriers, in world markets, with Javanese and Cuban sugars, which are manufactured under more favourable conditions. In order that they may be able to compete with foreign rivals

more favourably, these sugar companies strive to lower the prices of raw materials, which often results in the burden of this competition being put on the shoulders of the producers of raw materials. But as the price of Formosan rice has advanced in recent years due to its increased exportation to Japan, the sugar-cane growers can turn to the cultivation of rice, if the price of sugar cane makes too heavy a fall. The monopoly of raw materials by sugar companies is not, therefore, absolute.

5. I have so far dealt with the relationships between manufacturing industries—industries which have become independent of agriculture and have developed into undertakings operated on mechanical, factory and capitalistic lines—and farmers who produce raw materials. In most cases, the agricultural products, which are used as raw materials, are capable of storage for a fairly long time. Raw materials such as raw cocoons, however, cannot be kept long, and the eagerness shown by the producers to dispose them is usually turned to account by the filature owners who purchase them. If raw materials are of a nature which prevents storage, the manufacturing industry cannot become absolutely independent of agriculture, even if the process of manufacturing is already mechanised, so that the establishment of big factories for mass production is impossible. The tea manufacturing industry in Shidzuoka prefecture affords a case in point. The old method of manufacturing tea by hand has already been discarded in that prefecture in favour of production by machinery, but as tea-manufacturing machines are costly, poor farmers cannot purchase these machines, by the use of which tea can be manufactured more profitably. On the other hand, rich farmers who have such machines have to purchase tea leaves from the farmers who are too poor to buy such machines, as they must have a much greater quantity of tea leaves than is produced in their own plantations, in order to operate their machines to full capacity. This leads to the separation of the tea manufacturing industry from

the growers of tea leaves, and here again vertical differentiation of agricultural production takes place. Inasmuch, however, as tea leaves are practically incapable of being stored, large purchases are impossible, and consequently the tea manufacturing industry has not attained the scale of big factory production.

#### 4. CONCLUSION

In the previous chapters, I have studied the extent to which horizontal and vertical differentiations have taken place in the agricultural production of Japan, the course which they are now taking, and the influences which they are exerting on agriculture and the farmers. The process of differentiation in social evolution has a tendency to return to the former state of integration. The horizontal differentiation in agricultural production has caused the allocation of suitable crops to suitable districts. The result has been an increase in production and a reduction in the cost of production. From the point of view of national economy as a whole, it has been very beneficial. On the other hand, however, the changes of crops for cultivation have inflicted temporary losses locally, and, moreover, the consequent overproduction of special crops has resulted in injury to local interests, even if only temporarily. If, disregarding this plan of allocating suitable crops to suitable districts, all prefectures are to encourage agricultural production in their respective regions on the self-sufficiency basis, there will be over-production all over the country, and the producers in the over-producing districts will suffer. It is, therefore, necessary to give due consideration to this tendency of horizontal differentiation and to enforce regional control over agricultural production so as to encourage the cultivation of suitable crops in suitable districts with the general interests of agricultural production of the whole country in view. Especially in regard to products like vegetables, care must be taken to avoid the simultaneous

marketing of the products from different districts so that a seasonal over-supply may be averted. In the process of sales also, steps must be taken to exercise nation-wide control over the quantities of goods to be put on the central woolesale markets of all cities, through the combined activity of the co-operative marketing associations throughout the country, so that agricultural interests in individual prefectures may be promoted in conformity with the development of the agriculture of the country as a whole.

An observation of vertical differentiation in agricultural production shows also that the tendency is more or less manifest for all stages of production to be unified by farmers through the efforts of their co-operative associations. The growth of co-operation among farmer reelers and dairy farmers point to this tendency. However, where manufacturing industries detached from agriculture have already passed under the control of big monopolistic capital, it would be next to impossible for producers of raw materials to regain control and unify all stages of production through their co-operative associations. But, if a nation-wide combination of farmers is effected through the medium of the farmer manufacturers' co-operative associations, it may not be altogether impossible for farmers to get the prices of agricultural raw materials fixed rationally by curbing the monopolistic power of big industrialists. It is particularly necessary that where manufacturing industries of agricultural goods are not yet monopolised by big industrialists, efforts should be made to promote the integration and unification of vertical differentiations to advance the industrialisation of agrarian communities through the activity of manufacturing societies based on the co-operative associations of farmers.

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